HSM Wire International Inc
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Ph: 330-244-8501 Fax: 330-244-8561

www.hsmwire.com

Insulation Types	Advantages	Disadvantages
FEP and PTFE	● Excellent high temperature properties. PTFE is preferred for solder applications. FEP is preferred for jacket material. ●Non-flammable. ●Good outgassing characteristics. ●Most flexible of all insulations. ●Good weatherability, resists moisture absorption and atomic oxygen erosion.	●Susceptible to cold flow when stressed (bent) over tight radius or when laced too tightly. ●Degraded by solar radiation above 5 X 10^5 RADS. ●FEP has poor cut through resistance. ●Heaviest insulation.
ETFE	●Withstands physical abuse during and after installation. ●Good high and low temperature properties. ●High flex life. ●Good outgassing characteristics. ●Fair cold flow properties.	●Some ETFE insulations fail flammability in a 30% oxygen environment. ●Insulation tends to soften at high temperature. ●Degraded by gamma radiation above 10^6 RADS.
Cross-linked ETFE	●Higher strength than normal ETFE. ●Resistant to cold flow and abrasion. ●More resistant to rediation effects (to 5 X 10^7 RADS) ●Higher maximum temperature than normal ETFE ●Tin coating = 150°C Max. ●Silver Coating = 200°C Max. ●Good outgassing characteristics.	●Some ETFE insulations fail flammability in a 30% oxygen environment. ●Less flexible than extruded ETFE. ●More difficult to work with than PTFE.

Aromatic Polyimide	●Lightest weight wire insulation material. Commonly used with FEP or PTFE to form layered insulatin tapes. ●Excellent physical thermal and electric properties. ●Excellent cut-through resistance and cold flow resistance. ●Excellent radiation resistance (to 5 X 10^9 RADS) ●Good outgassing characteristics.	●Inflexibility - difficult to strip. ●Absorbs moisture. Degraded by atomic oxygen. Poor weatherability. ●Prone to wet-arc and dry-arc tracking from abrasions and cuts. ●More difficult to flex. ●Not stable to ultraviolet radiation.
Cross-linked Polyalkene	●Duel extrusion which is fused by sintering. Combines excellent abrasion and cut through resistance of Polyvinylidene Fluoride (PVDF, PVF_2-Penwalt Corp. ™Kynar) with Polyolefin for greater flexibility and improved heat resistance. Polyalkene is used mainly as a primary insulation under an outer jacket such as crosslinked ETFE or crosslinked PVDF/PFV_2. ●High dielectric constant, used in high voltage applications. ●PVDF has good radiation resistance (to 10^8 RADS) ●More resistant to cold flow. ●Good outgassing characteristics.	●Lower maximum conductor temperature rating ◦(135*C for GSFC S-311-P-13) ◦(150*C for Mil-W-81044) ●Reduced flexibility.
Silicon Rubber	●Excellent flexibility at low temperatures. ●Excellent high voltage corona resistance. ●Good radiation resistance (to 10^8 RADS). ●Good cold flow resistance.	●Poor cut through resistance, mechanical toughness, and fluid resistance. ●Must be processed for outgassing control. ●Flammable. ●No standard silicon rubber insulated wire or cable.

INFORMATION TO BE USED AS A GUIDE ONLY.

Information is derived from Nasa.gov

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